What Is Claimed Is:

1   1. A method of processing a command requesting information on any intermediate layer-2

2   devices present in a route from a first system to a second system, said any intermediate devices being

3   contained in a network implemented on a broadcast medium, said network containing a plurality of

4   devices including said any intermediate devices, said method comprising:

5   receiving said command;

6   determining a first layer-2 device which is connected directly to said first system, logically

7   viewing said first layer-2 device as a present layer-2 device if said second system is also not directly

8   connected to said first layer-2 device;

9   sending a request packet to said present layer-2 device requesting information on whether said

10 second system is connected directly to said system;

11   receiving a response packet from said present layer-2 device, wherein said response packet

12 indicates whether said second system is connected directly to said present layer-2 device, wherein said

13 response packet further identifies a subsequent layer-2 device in a route to said second system if said

14 second system is not connected directly to said present layer-2 device, wherein said subsequent layer-2

15 device is next to said present layer-2 device in said route to said second system; and

16   repeating said sending and receiving by using said subsequent layer-2 device in the place of said

17 present layer-2 device until said response packet indicates that said second system is directly connected

18 to said presently layer-2 device.

1   2. The method of claim 1, wherein a receiving device receives said command, and wherein said

2   receiving device is not directly connected to said first layer-2 device, wherein said determining further

3   comprises:

4   locating a directly connected device which is connected directly to said first system;

5   using said directly connected device as said present layer-2 device; and

6   performing said repeating to determine said route.

1   3. The method of claim 2, wherein said locating comprises:

2   substituting said receiving device as said first layer-2 device; and

3   performing said repeating to determine said directly connected device.

1   4. The method of claim 2, wherein said locating comprises sending a multicast packet directed

2   to said plurality of devices, said multicast packet containing an identifier of said source system, wherein

3   each of said plurality of devices is designed to respond indicating if said source system is connected

4   directly to the device.

1   5. The method of claim 1, wherein said determining, sending, receiving, and repeating are

2   performed in a receiving device.

1   6. The method of claim 5, further comprising providing a command line interface to enable a

2   network administrator to enter said command on said receiving device.

1   7. The method of claim 1, wherein said second system is deemed to be directly connected to

2   said first layer-2 device if said system is connected to a port of said first layer-2.

1   8. The method of claim 7, further comprising:

2   receiving in said receiving device a neighbor packet from a neighbor device on at least one port;

3   and

4   concluding in said receiving device that a system communicating on another port is connected

5   directly to said another port by the absence of reception of neighbor packets on said another port.

1   9. The method of claim 8, wherein said network is implemented using Ethernet/802.3 protocol.

1   10. The method of claim 1, wherein said request packet and said response packet are

2   generated consistent with UDP/IP protocol.

1   11. The method of claim 1, wherein said determining, sending, receiving, and repeating are

2   performed in a computer system.

1   12. A method of supporting the tracing of a route containing a sequence of layer-2 devices

2   between a first system and a second system, said method being performed in a device forming a part

3   of a network, said method comprising:

4   receiving in said device a request packet containing an identifier for said second system, wherein

5   said request packet requests information on whether said second system is connected directly to said

6   device;

7   determining in said device whether said device is connected directly to said system;

8   generating in said device a response packet, wherein said response packet indicates whether

9   said device is connected directly to said device; and

10   sending from said device said response packet.

1   13. The method of claim 12, wherein said generating further comprises:

2   idenfifying in said device a next device, wherein said next device is next to said device in a route

3   from said source system to said destination system; and

4   including data identifying said next device in said response packet.

1   14. The method of claim 13, wherein said identifying comprises:

2   examining a table in said device to determine a port on which said destination device

3   communicates; and

4   locating a device connecting on said port, wherein said located device comprises said next

5   device.

1   15. The method of claim 14, wherein said locating comprises:

2   receiving a neighbor packet from said next device on said port indicating a next device identifier

3   identifying said next device; and

4   including said next device identifier in said response packet.

1   16. The method of claim 15, wherein said first system is deemed to be connected directly to

2   said device if said first system is present on a port of said device, wherein determining is based on the

3   absence of reception of said neighbor packet on said port.

1   17. A device/system processing a command requesting information on any intermediate layer-2

2   devices present in a route from a first system to a second system, said any intermediate devices being

3   contained in a network implemented on a broadcast medium, said network containing a plurality of

4   devices including said any intermediate devices, said device/system comprising:

5   means for receiving said command;

6   means for determining a first layer-2 device which is connected directly to said first system,

7   logically viewing said first layer-2 device as a present layer-2 device if said second system is also not

8   directly connected to said first layer-2 device;

9   means for sending a request packet to said present layer-2 device requesting information on

10   whether said second system is connected directly to said system;

11   means for receiving a response packet from said present layer-2 device, wherein said response

12   packet indicates whether said second system is connected directly to said present layer-2 device,

13   wherein said response packet further identifies a subsequent layer-2 device in a route to said second

14   system if said second system is not connected directly to said present layer-2 device, wherein said

15   subsequent layer-2 device is next to said present layer-2 device in said route to said second system;

16   and

17   means for repeating said sending and receiving by using said subsequent layer-2 device in the

18   place of said present layer-2 device until said response packet indicates that said second system is

19   directly connected to said presently layer-2 device.

1   18. The system/device of claim 17, wherein a receiving device receives said command, and

2   wherein said receiving device is not directly connected to said first layer-2 device, wherein said means

3   for determining further comprises:

4   means for locating a directly connected device which is connected directly to said first system;

5   means for using said directly connected device as said present layer-2 device; and

6   performing said repeating to determine said route.

1   19. The system/device of claim 18, wherein said means for locating comprises:

2   means for substituting said receiving device as said first layer-2 device; and

3   means for performing said repeating to determine said directly connected device.

1   20. The system/device of claim 18, wherein said means for locating comprises sending a

2 multicast packet directed to said plurality of devices, said multicast packet containing an identifier of

3 said source system, wherein each of said plurality of devices is designed to respond indicating if said

4 source system is connected directly to the device.

1   21. A device for supporting the tracing of a route containing a sequence of layer-2 devices

2 between a first system and a second system, said device being comprised in a network based on

3 broadcast medium, said device comprising:

4   means for receiving in said device a request packet containing an identifier for said second

5 system, wherein said request packet requests information on whether said second system is connected

6 directly to said device;

7   means for determining in said device whether said device is connected directly to said system;

8   means for generating in said device a response packet, wherein said response packet indicates

9 whether said device is connected directly to said device; and

10   means for sending from said device said response packet.

1   22. The device of claim 21, wherein said means for generating further comprises:

2   means for identifying in said device a next device, wherein said next device is next to said device

3   in a route from said source system to said destination system; and

4   means for including data identifying said next device in said response packet.

1   23. The device of claim 22, wherein said means for identifying comprises:

2   means for examining a table in said device to determine a port on which said destination device

3   communicates; and

4   means for locating a device connecting on said port, wherein said located device comprises said

5   next device.

1   24. The device of claim 23, wherein said means for locating comprises:

2   means for receiving a neighbor packet from said next device on said port indicating a next

3   device identifier identifying said next device; and

4   means for including said next device identifier in said response packet.

1   25. The device of claim 23, wherein said first system is deemed to be connected directly to

2   said device if said first system is present on a port of said device, wherein determining is based on the

3   absence of reception of said neighbor packet on said port.

4   26. A computer readable medium carrying one or more sequences of instructions for causing

5   a device to process a command requesting information on any intermediate layer-2 devices present in

6   a route from a first system to a second system, said any intermediate devices being contained in a

7   network implemented on a broadcast medium, said network containing a plurality of devices including

8   said any intermediate devices, wherein execution of said one or more sequences of instructions by one

9   or more processors contained in said device causes said one or more processors to perform the actions

10   of:

11   receiving said command;

12   determining a first layer-2 device which is connected directly to said first system, logically

13   viewing said first layer-2 device as a present layer-2 device if said second system is also not directly

14   connected to said first layer-2 device;

15   sending a request packet to said present layer-2 device requesting information on whether said

16   second system is connected directly to said system;

17   receiving a response packet from said present layer-2 device, wherein said response packet

18   indicates whether said second system is connected directly to said present layer-2 device, wherein said

19   response packet further identifies a subsequent layer-2 device in a route to said second system if said

20   second system is not connected directly to said present layer-2 device, wherein said subsequent layer-2

21   device is next to said present layer-2 device in said route to said second system; and

22   repeating said sending and receiving by using said subsequent layer-2 device in the place of said

23   present layer-2 device until said response packet indicates that said second system is directly connected

24   to said presently layer-2 device.

1   27. The computer readable medium of claim 26, wherein said command is received in a

2   receiving device, wherein said receiving device is not directly connected to said first layer-2 device,

3   wherein said determining further comprises:

4   locating a directly connected device which is connected directly to said first system;

5   using said directly connected device as said present layer-2 device; and

6   second performing said repeating.

1   28. The computer readable medium of claim 27, wherein said locating comprises:

2   substituting said receiving device as said first layer-2 device;

3   third performing said repeating;

4   using a last one of said present-layer 2 determined by said third performing as said directly

5   connected device.

1   29. The computer readable medium of claim 27, wherein said locating comprises sending a

2   multicast packet directed to said plurality of devices, said multicast packet containing an identifier of

3   said source system, wherein each of said plurality of devices is designed to respond indicating if said

4   source system is connected directly to the device.

1   30. The computer readable medium of claim 26, wherein said determining, sending, receiving,

2   and repeating are performed in said receiving device.

1   31. The computer readable medium of claim 30, further comprising providing a command line

2   interface to enable a network administrator to enter said command on said receiving device.

1   32. The computer readable medium of claim 26, wherein said second system is deemed to be

2   directly connected to said first layer-2 device if said system is connected to a port of said first layer-2.

1   33. The computer readable medium of claim 32, further comprising:

2 receiving in said receiving device a neighbor packet from a neighbor device on at least one port;

3 and

4 concluding in said receiving device that a system communicating on another port is connected

5 directly to said another port by the absence of reception of neighbor packets on said another port.

1 34. The computer readable medium of claim 33, wherein said network is implemented using

2 Ethernet/802.3 protocol and said request packet and said response packet are generated consistent

3 with UDP/IP protocol.

1 35. A computer readable medium carrying one or more sequences of instructions for causing

2 a device to support the tracing of a route containing a sequence of layer-2 devices between a first

3 system and a second system, said device being comprised in a network based on broadcast medium,

4 wherein execution of said one or more sequences of instructions by one or more processors contained

5 in said device causes said one or more processors to perform the actions of:

6 receiving in said device a request packet containing an identifier for said second system, wherein

7 said request packet requests information on whether said second system is connected directly to said

8 device;

9 determining in said device whether said device is connected directly to said system;

10 generating in said device a response packet, wherein said response packet indicates whether

11 said device is connected directly to said device; and

12 sending from said device said response packet.

1 36. The computer readable medium of claim 35, wherein said generating further comprises:

2   identifying in said device a next device, wherein said next device is next to said device in a route

3   from said source system to said destination system; and

4   including data identifying said next device in said response packet.

1   37. The computer readable medium of claim 36, wherein said identifying comprises:

2   examining a table in said device to determine a port on which said destination device

3   communicates; and

4   locating a device connecting on said port, wherein said located device comprises said next

5   device.

38. The computer readable medium of claim 37, wherein said locating comprises:

2   receiving a neighbor packet from said next device on said port indicating a next device identifier

3   identifying said next device; and

4   including said next device identifier in said response packet.

1   39. A device for supporting the tracing of a route containing a sequence of layer-2 devices

2   between a first system and a second system, said device being comprised in a network based on

3   broadcast medium, said device comprising:

4   an inbound interface receiving a request packet containing an identifier for said second system,

5   wherein said request packet requests information on whether said second system is connected directly

6   to said device;

7   a next hop block determining whether said device is connected directly to said system;

8   a generate request/response block generating a response packet, wherein said response packet

9   indicates whether said device is connected directly to said device; and

10   an outbound interface sending said response packet.

1   40. The device of claim 39, further comprising:

2   a memory storing a first table and a second table, said first table indicating a port on which each

3   system communicates, said second table indicating a device connecting to each port; and

4   a port determination block determining a port on which said second system communicates,

5   wherein said next hop block examines said second table to determine said a next device

6   according to the port determined by said port determination block, wherein said next device is

7   contained in said sequence of layer-2 devices.

1   41. The device of claim 40, wherein said next hop block determines that said second system

2   is directly connected to a first port indicated by said first table if no device is associated with said first

3   port in said second table.

1   42. The device of claim 39, further comprising an user interface receiving said a trace

2   command from a network administrator.

1   43. The device of claim 42, wherein said device is not directly connected to said first system,

2   said device further comprising a control logic to trace a directly connecting device connecting directly

3   to said first system, wherein said route is traced from said directly connecting device using said inbound

4   interface, said outbound interface, said next hop block and said generate request/response block.

1   44. The device of claim 42, wherein said device is not directly connected to said first system,

2   said device further comprising a control logic to trace a directly connecting device connecting directly

3   to said first system by sending a multicast packet.

1   45. The device of claim 39, further comprising a response processor to receive a response

2   packet, wherein said response packet indicates a next device in said route, wherein said generate

3   request/response block generates another request packet directed to said next device, wherein said

4   another request packet requests said next device to indicate whether said second system is connected

5   directly to said next device.